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## Background

Blood acylcarnitine profile analysis is a powerful tool to diagnose numerous inherited metabolic disorders, including many mitochondrial fatty acid oxidation disorders and organic acidemias. It is used for follow-up testing of screen positive results from newborn screening programs and in the evaluation of children and adults suspected of having a fatty acid or organic acid disorder. Serum or plasma samples, the latter obtained with a variety of anticoagulants, are normally accepted for acylcarnitine profile analysis. In view of the diverse types of blood collection tubes used in acylcarnitine analyses, it is important to evaluate possible matrix effects on the measurement of the many acylcarnitines that are assessed in blood acylcarnitine assays.

## Study Design

52 acylcarnitines and related analytes were measured by liquid chromatography-tandem mass spectrometry using plasma obtained from sodium heparin (green top tube), lithium heparin (green top tube), and EDTA (lavender top tube) anticoagulated tubes, as well as serum (red top tube).

Samples from each blood tube type were obtained at the same time from three healthy individuals. Each sample is assayed in triplicates

## Methods & Results

### Instrument conditions: Mass spectrometry transitions & parameters

Transition	m/z	Relative Intensity	Scan	Retention Time	Acylcarnitine
1	148.0	100	1.0	1.0	NSK-B-1
2	148.0	100	1.0	1.0	NSK-B-G1-1
3	148.0	100	1.0	1.0	NSK-B-G1-2
4	148.0	100	1.0	1.0	NSK-B-G1-3
5	148.0	100	1.0	1.0	NSK-B-G1-4
6	148.0	100	1.0	1.0	NSK-B-G1-5
7	148.0	100	1.0	1.0	NSK-B-G1-6
8	148.0	100	1.0	1.0	NSK-B-G1-7
9	148.0	100	1.0	1.0	NSK-B-G1-8
10	148.0	100	1.0	1.0	NSK-B-G1-9
11	148.0	100	1.0	1.0	NSK-B-G1-10
12	148.0	100	1.0	1.0	NSK-B-G1-11
13	148.0	100	1.0	1.0	NSK-B-G1-12
14	148.0	100	1.0	1.0	NSK-B-G1-13
15	148.0	100	1.0	1.0	NSK-B-G1-14
16	148.0	100	1.0	1.0	NSK-B-G1-15
17	148.0	100	1.0	1.0	NSK-B-G1-16
18	148.0	100	1.0	1.0	NSK-B-G1-17
19	148.0	100	1.0	1.0	NSK-B-G1-18
20	148.0	100	1.0	1.0	NSK-B-G1-19
21	148.0	100	1.0	1.0	NSK-B-G1-20
22	148.0	100	1.0	1.0	NSK-B-G1-21
23	148.0	100	1.0	1.0	NSK-B-G1-22
24	148.0	100	1.0	1.0	NSK-B-G1-23
25	148.0	100	1.0	1.0	NSK-B-G1-24
26	148.0	100	1.0	1.0	NSK-B-G1-25
27	148.0	100	1.0	1.0	NSK-B-G1-26
28	148.0	100	1.0	1.0	NSK-B-G1-27
29	148.0	100	1.0	1.0	NSK-B-G1-28
30	148.0	100	1.0	1.0	NSK-B-G1-29
31	148.0	100	1.0	1.0	NSK-B-G1-30
32	148.0	100	1.0	1.0	NSK-B-G1-31
33	148.0	100	1.0	1.0	NSK-B-G1-32
34	148.0	100	1.0	1.0	NSK-B-G1-33
35	148.0	100	1.0	1.0	NSK-B-G1-34
36	148.0	100	1.0	1.0	NSK-B-G1-35
37	148.0	100	1.0	1.0	NSK-B-G1-36
38	148.0	100	1.0	1.0	NSK-B-G1-37
39	148.0	100	1.0	1.0	NSK-B-G1-38
40	148.0	100	1.0	1.0	NSK-B-G1-39
41	148.0	100	1.0	1.0	NSK-B-G1-40
42	148.0	100	1.0	1.0	NSK-B-G1-41
43	148.0	100	1.0	1.0	NSK-B-G1-42
44	148.0	100	1.0	1.0	NSK-B-G1-43
45	148.0	100	1.0	1.0	NSK-B-G1-44
46	148.0	100	1.0	1.0	NSK-B-G1-45
47	148.0	100	1.0	1.0	NSK-B-G1-46
48	148.0	100	1.0	1.0	NSK-B-G1-47
49	148.0	100	1.0	1.0	NSK-B-G1-48
50	148.0	100	1.0	1.0	NSK-B-G1-49
51	148.0	100	1.0	1.0	NSK-B-G1-50
52	148.0	100	1.0	1.0	NSK-B-G1-51
53	148.0	100	1.0	1.0	NSK-B-G1-52
54	148.0	100	1.0	1.0	NSK-B-G1-53
55	148.0	100	1.0	1.0	NSK-B-G1-54
56	148.0	100	1.0	1.0	NSK-B-G1-55
57	148.0	100	1.0	1.0	NSK-B-G1-56
58	148.0	100	1.0	1.0	NSK-B-G1-57
59	148.0	100	1.0	1.0	NSK-B-G1-58
60	148.0	100	1.0	1.0	NSK-B-G1-59
61	148.0	100	1.0	1.0	NSK-B-G1-60
62	148.0	100	1.0	1.0	NSK-B-G1-61
63	148.0	100	1.0	1.0	NSK-B-G1-62
64	148.0	100	1.0	1.0	NSK-B-G1-63
65	148.0	100	1.0	1.0	NSK-B-G1-64
66	148.0	100	1.0	1.0	NSK-B-G1-65
67	148.0	100	1.0	1.0	NSK-B-G1-66
68	148.0	100	1.0	1.0	NSK-B-G1-67
69	148.0	100	1.0	1.0	NSK-B-G1-68
70	148.0	100	1.0	1.0	NSK-B-G1-69
71	148.0	100	1.0	1.0	NSK-B-G1-70
72	148.0	100	1.0	1.0	NSK-B-G1-71
73	148.0	100	1.0	1.0	NSK-B-G1-72
74	148.0	100	1.0	1.0	NSK-B-G1-73
75	148.0	100	1.0	1.0	NSK-B-G1-74
76	148.0	100	1.0	1.0	NSK-B-G1-75
77	148.0	100	1.0	1.0	NSK-B-G1-76
78	148.0	100	1.0	1.0	NSK-B-G1-77
79	148.0	100	1.0	1.0	NSK-B-G1-78
80	148.0	100	1.0	1.0	NSK-B-G1-79
81	148.0	100	1.0	1.0	NSK-B-G1-80
82	148.0	100	1.0	1.0	NSK-B-G1-81
83	148.0	100	1.0	1.0	NSK-B-G1-82
84	148.0	100	1.0	1.0	NSK-B-G1-83
85	148.0	100	1.0	1.0	NSK-B-G1-84
86	148.0	100	1.0	1.0	NSK-B-G1-85
87	148.0	100	1.0	1.0	NSK-B-G1-86
88	148.0	100	1.0	1.0	NSK-B-G1-87
89	148.0	100	1.0	1.0	NSK-B-G1-88
90	148.0	100	1.0	1.0	NSK-B-G1-89
91	148.0	100	1.0	1.0	NSK-B-G1-90
92	148.0	100	1.0	1.0	NSK-B-G1-91
93	148.0	100	1.0	1.0	NSK-B-G1-92
94	148.0	100	1.0	1.0	NSK-B-G1-93
95	148.0	100	1.0	1.0	NSK-B-G1-94
96	148.0	100	1.0	1.0	NSK-B-G1-95
97	148.0	100	1.0	1.0	NSK-B-G1-96
98	148.0	100	1.0	1.0	NSK-B-G1-97
99	148.0	100	1.0	1.0	NSK-B-G1-98
100	148.0	100	1.0	1.0	NSK-B-G1-99
101	148.0	100	1.0	1.0	NSK-B-G1-100
102	148.0	100	1.0	1.0	NSK-B-G1-101
103	148.0	100	1.0	1.0	NSK-B-G1-102
104	148.0	100	1.0	1.0	NSK-B-G1-103
105	148.0	100	1.0	1.0	NSK-B-G1-104
106	148.0	100	1.0	1.0	NSK-B-G1-105
107	148.0	100	1.0	1.0	NSK-B-G1-106
108	148.0	100	1.0	1.0	NSK-B-G1-107
109	148.0	100	1.0	1.0	NSK-B-G1-108
110	148.0	100	1.0	1.0	NSK-B-G1-109
111	148.0	100	1.0	1.0	NSK-B-G1-110
112	148.0	100	1.0	1.0	NSK-B-G1-111
113	148.0	100	1.0	1.0	NSK-B-G1-112
114	148.0	100	1.0	1.0	NSK-B-G1-113
115	148.0	100	1.0	1.0	NSK-B-G1-114
116	148.0	100	1.0	1.0	NSK-B-G1-115
117	148.0	100	1.0	1.0	NSK-B-G1-116
118	148.0	100	1.0	1.0	NSK-B-G1-117
119	148.0	100	1.0	1.0	NSK-B-G1-118
120	148.0	100	1.0	1.0	NSK-B-G1-119
121	148.0	100	1.0	1.0	NSK-B-G1-120
122	148.0	100	1.0	1.0	NSK-B-G1-121
123	148.0	100	1.0	1.0	NSK-B-G1-122
124	148.0	100	1.0	1.0	NSK-B-G1-123
125	148.0	100	1.0	1.0	NSK-B-G1-124
126	148.0	100	1.0	1.0	NSK-B-G1-125
127	148.0	100	1.0	1.0	NSK-B-G1-126
128	148.0	100	1.0	1.0	NSK-B-G1-127
129	148.0	100	1.0	1.0	NSK-B-G1-128
130	148.0	100	1.0	1.0	NSK-B-G1-129
131	148.0	100	1.0	1.0	NSK-B-G1-130
132	148.0	100	1.0	1.0	NSK-B-G1-131
133	148.0	100	1.0	1.0	NSK-B-G1-132
134	148.0	100	1.0	1.0	NSK-B-G1-133
135	148.0	100	1.0	1.0	NSK-B-G1-134
136	148.0	100	1.0	1.0	NSK-B-G1-135
137	148.0	100	1.0	1.0	NSK-B-G1-136
138	148.0	100	1.0	1.0	NSK-B-G1-137
139	148.0	100	1.0	1.0	NSK-B-G1-138
140	148.0	100	1.0	1.0	NSK-B-G1-139
141	148.0	100	1.0	1.0	NSK-B-G1-140
142	148.0	100	1.0	1.0	NSK-B-G1-141
143	148.0	100	1.0	1.0	NSK-B-G1-142
144	148.0	100	1.0	1.0	NSK-B-G1-143
145	148.0	100	1.0	1.0	NSK-B-G1-144
146	148.0	100	1.0	1.0	NSK-B-G1-145
147	148.0	100	1.0	1.0	NSK-B-G1-146
148	148.0	100	1.0	1.0	NSK-B-G1-147
149	148.0	100	1.0	1.0	NSK-B-G1-148
150	148.0	100	1.0	1.0	NSK-B-G1-149
151	148.0	100	1.0	1.0	NSK-B-G1-150
152	148.0	100	1.0	1.0	NSK-B-G1-151
153	148.0	100	1.0	1.0	NSK-B-G1-152
154	148.0	100	1.0	1.0	NSK-B-G1-153
155	148.0	100	1.0	1.0	NSK-B-G1-154
156	148.0	100	1.0	1.0	NSK-B-G1-155
157	148.0	100	1.0	1.0	NSK-B-G1-156
158	148.0	100	1.0	1.0	NSK-B-G1-157
159	148.0	100	1.0	1.0	NSK-B-G1-158
160	148.0	100	1.0	1.0	NSK-B-G1-159
161	148.0	100	1.0	1.0	NSK-B-G1-160
162	148.0	100	1.0	1.0	NSK-B-G1-161
163	148.0	100	1.0	1.0	NSK-B-G1-162
164	148.0	100	1.0	1.0	NSK-B-G1-163
165	148.0	100	1.0	1.0	NSK-B-G1-164
166	148.0	100	1.0	1.0	NSK-B-G1-165
167	148.0	100	1.0	1.0	NSK-B-G1-166
168	148.0	100	1.0	1.0	NSK-B-G1-167
169	148.0	100	1.0	1.0	NSK-B-G1-168
170	148.0	100	1.0	1.0	NSK-B-G1-169
171	148.0	100	1.0	1.0	NSK-B-G1-170
172	148.0	100	1.0	1.0	NSK-B-G1-171
173	148.0	100	1.0	1.0	NSK-B-G1-172
174	148.0	100	1.0	1.0	NSK-B-G1-173
175	148.0	100	1.0	1.0	NSK-B-G1-174
176	148.0	100	1.0	1.0	NSK-B-G1-175
177	148.0	100	1.0	1.0	NSK-B-G1-176
178	148.0	100	1.0	1.0	NSK-B-G1-177
179	148.0	100	1.0	1.0	NSK-B-G1-178
180	148.0	100	1.0	1.0	NSK-B-G1-179
181	148.0	100	1.0	1.0	NSK-B-G1-180
182	148.0	100	1.0	1.0	NSK-B-G1-181
183	148.0	100	1.0	1.0	NSK-B-G1-182
184	148.0	100	1.0	1.0	NSK-B-G1-183
185	148.0	100	1.0	1.0	NSK-B-G1-184
186	148.0	100	1.0	1.0	NSK-B-G1-185
187	148.0	100	1.0	1.0	NSK-B-G1-186
188	148.0	100	1.0	1.0	NSK-B-G1-187
189	148.0	100	1.0	1.0	NSK-B-G1-188
190	148.0	100	1.0	1.0	NSK-B-G1-189
191	148.0	100	1.0	1.0	NSK-B-G1-190
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